Amendments to the Specification:

Please replace paragraph [0001] with the following rewritten paragraph:

--This invention relates to the protection of intrinsically safe circuits, which are potentially ~~incendive~~ incendiary. It is particularly concerned with the protection of intrinsically safe circuits which operate within hazardous areas, for example in the presence of flammable gases.--

Please replace paragraph [0002] with the following rewritten paragraph:

--In systems where power supplies feed a number of functional modules, where there may be the presence of flammable gases, there is a need to ensure that the system is safe. This means that the wiring between the power supplies and the modules must be protected in some way so that it is not ~~incendive~~ incendiary, even if the modules are unplugged with the system running. One way to achieve this is to provide electronic power limiters in the output from each of the power supplies. These power limiters define the maximum output voltage and limit the short-circuit current. However, these power limiters are quite complex because they must meet the conflicting requirements of being precise yet operate fast. This complexity has to be duplicated to meet the requirements of other, more exacting systems.--

Please replace paragraph [0003] with the following rewritten paragraph:

-- It is an object of the present invention to provide a means of protecting potentially ~~incendive~~ incendiary, intrinsically safe circuits using a simpler system than the relatively complex, conventional power limiters.--

Please replace paragraph [0007] with the following rewritten paragraph:

--In accordance with the invention there is provided a method of protecting intrinsically safe circuits in which a voltage is supplied via a supply circuit to a load, which comprises sensing the voltage at the load and, in the event that a decrease in the said voltage is detected, disconnecting the load in such manner as to prevent any series break in the supply circuit from becoming ~~incendive~~ incendiary.--

Please replace paragraph [0008] with the following rewritten paragraph:

--Also in accordance with the invention there is provided apparatus for protecting an intrinsically safe circuit which includes a load and which is arranged to be supplied via a supply circuit with a voltage from power supply means, the apparatus comprising sensing means arranged to detect the said voltage, and switch means arranged, in response to the detection by the sensing means of a decrease in the said voltage, to disconnect the load in such manner as to prevent any series break in the supply circuit from becoming ~~incendive~~ incendiary.--

Please replace paragraph [0009] with the following rewritten paragraph:

--Also in accordance with the invention there is provided a power system for an intrinsically safe circuit, comprising power supply means, power distribution means connected to the power supply means, and at least one module connected to the power distribution means, the or each module comprising an intrinsically safe circuit including a load, sensing means to detect the voltage ~~suppled~~ supplied to the load, and switch means arranged, in response to the detection by the sensing means of a decrease in the supplied voltage, to disconnect the load in such manner as to prevent any series break upstream from the switch means from becoming ~~incendive~~ incendiary.--

Please replace paragraph [0020] with the following rewritten paragraph:

--The circuit shown in Fig. 1, to illustrate the prior art, has a voltage supply 10, a load 12 and an active voltage and current limiter 14 upstream from the load. A pin 16 illustrates a short-circuit condition and a break in the wiring is indicated at 18. The active limiter 14 shown in Fig. 1 protects the load by limiting the voltage and current which is available to the circuit and keeping the values below a known ~~incendive~~ incendiary limit. However, this is not strictly necessary. What is required is to restrict the voltage and current which is available to a developing spark to levels below the ~~incendive~~ incendiary limit.--

Please replace paragraph [0021] with the following rewritten paragraph:

--Fig. 2 illustrates the concept underlying the present invention. A1 is a voltage sensor, sensing the voltage developed across the break 18 in the circuit. A2 is a current sensor, sensing the current flowing through it. The two sensors A1 and A2 are combined in a manner which will enable a switch 20 to open before the V/I characteristic exceeds the ~~incendive~~ incendiary limit. It is to be noted that the power available to the load 12 is not now constrained to be below the ~~incendive~~ incendiary limit.--

Please replace paragraph [0023] with the following rewritten paragraph:

-- Fig. 3 shows a first embodiment in accordance with the invention in which all of the circuit to the left-hand side of the voltage sensor A1 is now protected. Voltage sensor A1 now senses the voltage at the load end of the circuit, protecting all the wiring to its left. The voltage supply 10 is now added to the voltage sensed by voltage sensor A1, but is constant and allowance can be made for it. More importantly, the current sensor A2 is omitted and the output of the voltage sensor A1 is taken directly to the switch 20. It is known that for hydrogen, the most ~~incendive~~ incendiary gas group, it is impossible to get ignition with a voltage which is less than about 8 volts at any current, provided that the current is insufficient to cause hot or molten metallic particles to be thrown off from the sparking contact. If the voltage which is allowed to develop across a breaking contact is restricted to less than 8 volts, then a precise current limit may not be required. In some apparatus, it may be possible to rely on the nature of the load 12 to determine the maximum current.--

Please replace paragraph [0027] with the following rewritten paragraph:

--If a break occurs to the left of TR1, D2 and R1, due either to a fault or a deliberate unplugging, the voltage at the emitter drops as voltage is developed across the break. The voltage of Zener diode D2 is chosen so that transistor TR1 turns off before the spark has developed sufficient energy to be ~~incendive~~ incendiary. This basic circuit has been tested at 24V, 0.9A and found to be non-~~incendive~~ incendiary in hydrogen/air with a Zener diode voltage as low as 10V.--

Please replace paragraph [0028] with the following rewritten paragraph:

--In one practical test circuit to this design, a load of 26 ohms was used, giving a load current of about 850mA, which is normally ~~incendive~~ incendiary in a constant current circuit down to around 12 volts or so.--

Please replace paragraph [0031] with the following rewritten paragraph:

-- The construction of the wiring between the power supply and the module is controlled so that shunt faults cannot occur. Series faults (breaks) are rendered non-~~incendive~~ incendiary by the protection provided by the switch.--

Please replace paragraph [0033] with the following rewritten paragraph:

-- The circuitry to the right of transistor TR1 is not protected and so will be designed to be non-~~incendive~~ incendiary using other techniques.--

Please replace paragraph [0036] with the following rewritten paragraph:

-- The protection works equally well with multiple modules as with a single module. The effect of a break at a common point feeding several modules is equivalent to a break feeding a single module taking the same total current.

a) If a power supply 10a, 10b is disconnected, and the remaining power supply or supplies are able to maintain the bus voltage, then no spark will be developed at the break because no voltage will develop across it. This is so even without the switch protection of the present invention.

b) If a power supply 10a, 10b is disconnected and the bus voltage falls, a spark will develop at the break and the protection system of the invention will function to prevent it becoming ~~incendive~~ incendiary.--

Please replace paragraph [0037] with the following rewritten paragraph:

--The circuits described above are not tolerant of component faults, but are suitable for use in environments in which the flammable gas hazard is less severe. For Zone 1 environments, additional requirements are imposed. These include:

a) The circuitry to the right of TR1, D2 and R1 is unprotected by the switch and so the construction must protect any potentially ~~incendive~~ incendiary currents in some other

way. Full encapsulation is one possibility, but is rather inelegant. Alternatively, the current-carrying tracks could be made infallible up to the point where the circuitry branches and the current in each branch is limited by other means.

b) Each component on which intrinsic safety depends, which is most of them, must be run at two-thirds of its manufacturer's rating under all conditions of operation. (Unless a countable fault in a neighbouring component has occurred and the first component is no longer relied upon for intrinsic safety protection).

c) Protection must be maintained with one fault. Two switching circuits will be needed in cascade to achieve this.--

Please replace paragraph [0055] with the following rewritten paragraph:

-- The protection system of the present invention has a number of advantages over known forms of protection.

i) As compared to expensive power supply limiters, the present invention requires only the addition of inexpensive components to the modules. They dissipate little power, even under fault conditions, so there is no great demand for the use of heat sinks.

ii) The power supplies are simple. Multiple modules can be fed through a bus system. No output current protection is necessary since the switching circuitry in the modules limits the total current that can be drawn.

iii) The protection system protects all the power systems upstream from the module against series breaks, both from faults and unplugging, including the power

supply connections, so no special measures are required to protect the power bus against series breaks.

iv) Power is not restricted to non-~~incendive~~ incendiary levels.

v) There is no disadvantage in using higher supply voltages. In fact, efficiency and available power increases at higher voltages.

vi) The only protection required in the power supplies is to limit the output voltage.--

Please replace the Abstract with the following rewritten Abstract:

ABSTRACT ~~OF THE DISCLOSURE~~

~~PROTECTION OF INTRINSICALLY SAFE CIRCUITS~~

The protection of potentially ~~incendive~~ incendiary circuits is achieved by a power system which comprises a power supply connected by power distribution wiring to one or more modules, the ~~or each module~~ one or more modules each comprising an intrinsically safe circuit including a load, ~~sensing means~~ a sensor to detect the voltage supplied to the load, and a fast-acting switch arranged, in response to the detection of a decrease in the supplied voltage, to disconnect the load in such manner as to prevent any series break upstream from the switch from becoming ~~incendive~~ incendiary.